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Title: SQS Fiber Lens Array

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Intended for: Requirements document to fiber lens array. Presentation to be sent to potential vendor.

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# SQS Fiber Lens Array

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November 13, 2018

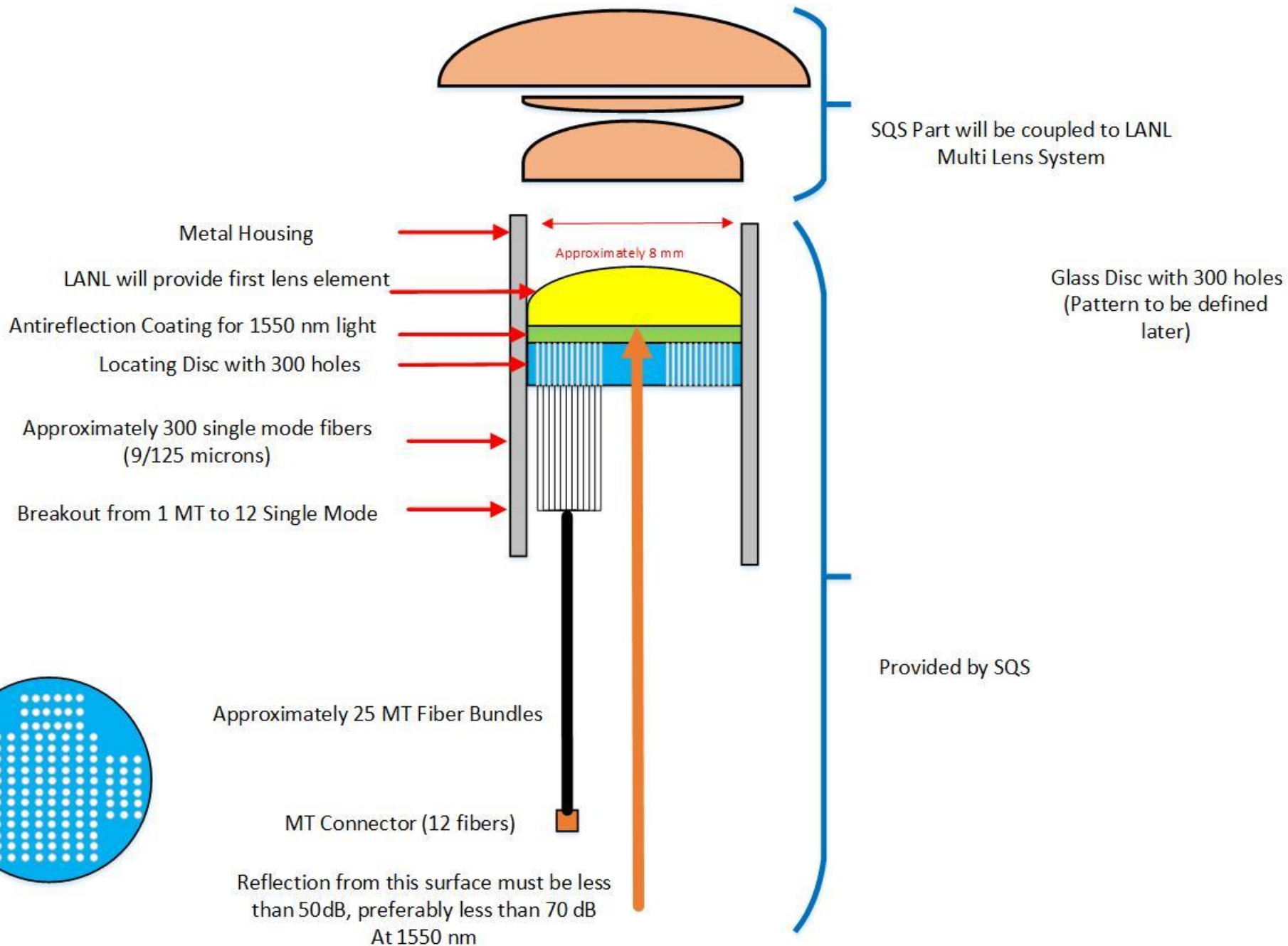
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# Fiber/Lens Interface Array Requirements

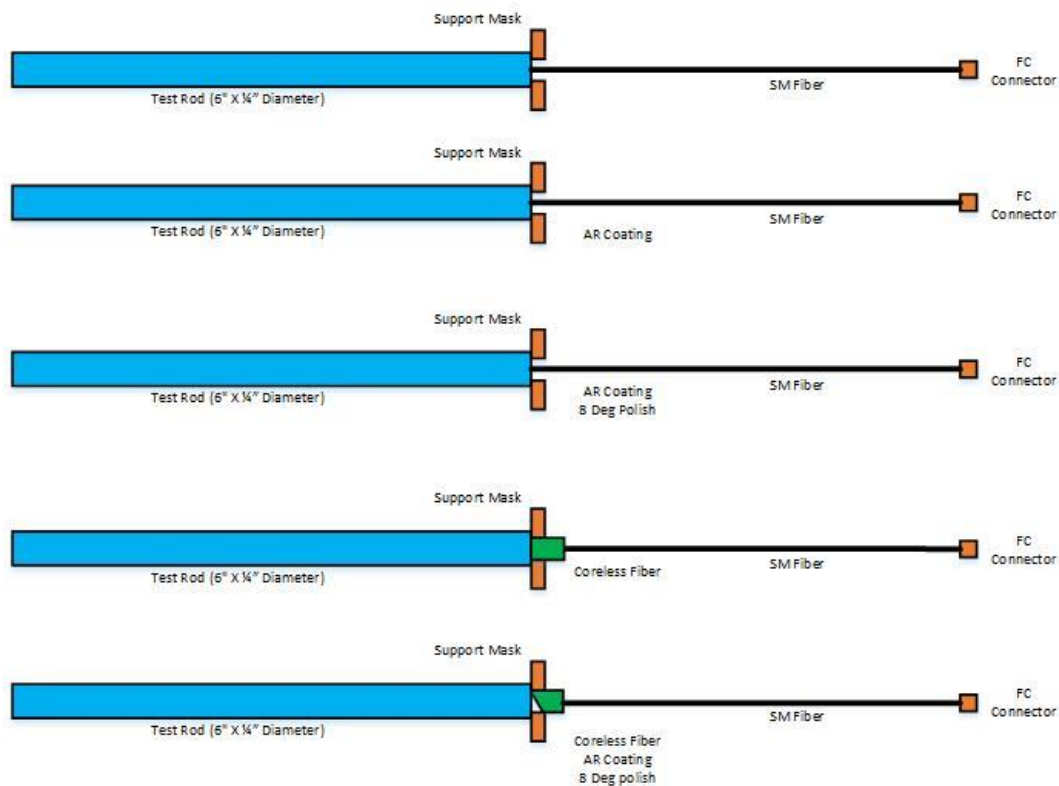
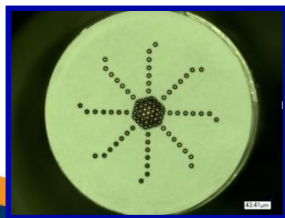
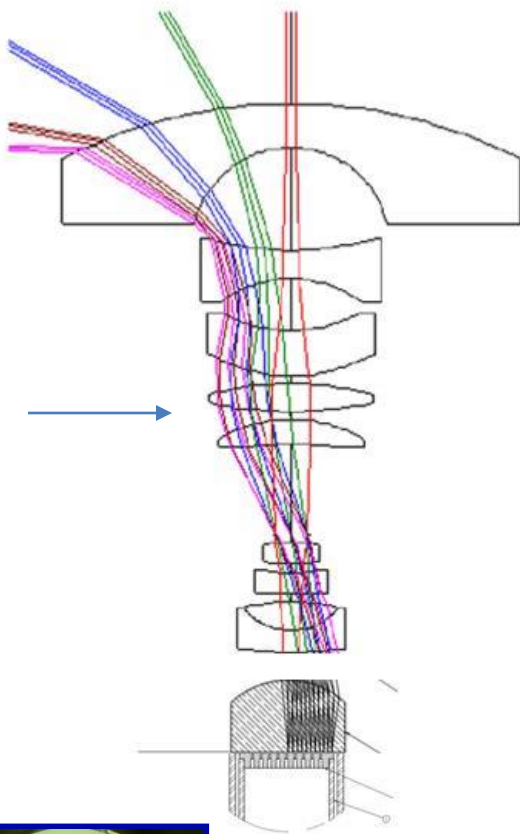
- Fibers:
  - MT terminated fiber bundles with 12 single mode fibers per bundle (9/125 microns core/cladding)
  - Approximately 25 MT fiber bundles = 300 fibers
- **Locating disk (glass or ceramic)**
  - Approximately 8 mm in diameter
  - Fibers distributed roughly uniformly. Exact positions are not necessary.
  - Top surface coated with **AR coating** for 1550 nm
  - Coupled to **first lens element (yellow)** that LANL will provide
  - LANL will assemble your fiber lens interface array to LANL's compound lens (fisheye)
- Test devices for Proof of Principle (optional)
  - Test with single fiber with FC connector coupled to a glass rod
  - Possible configurations reduce back reflection could include some combination of coreless fiber, 8 degree polish and AR coating
  - Backreflection will be measured at LANL using a LUNA OBR (optical back scatter reflectometer)
- Sub assembly (final deliverable)
  - Mounted in metal housing to be coupled with our multi lense system
  - Backreflection at interface of glass disk to first lens element must be less than 50 dB, preferably less than 70 dB
  - Backreflection will be measured at LANL using a LUNA OBR (optical back scatter reflectometer)

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# Test Objects for Proof of Principle



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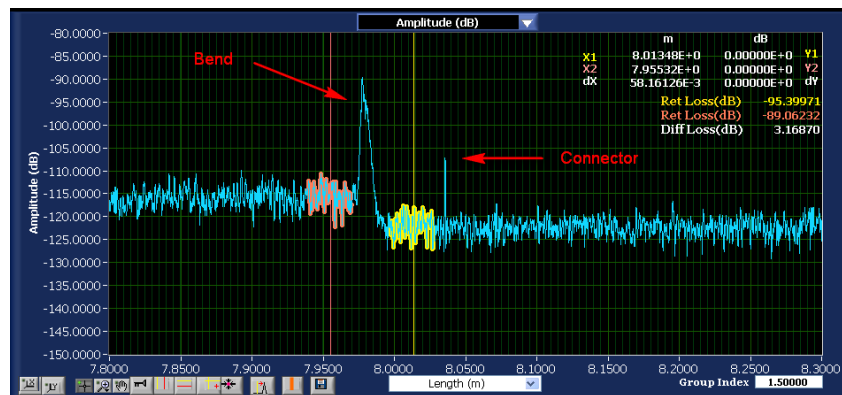
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# LUNA OBR (Optical Backscatter Reflectometer)



## MEASUREMENT PERFORMANCE HIGHLIGHTS

- -130 dB sensitivity
- 70 dB dynamic range
- 2 kilometer length range with no dead-zone
- < 0.05 dB insertion loss resolution



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# Contact Information

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